

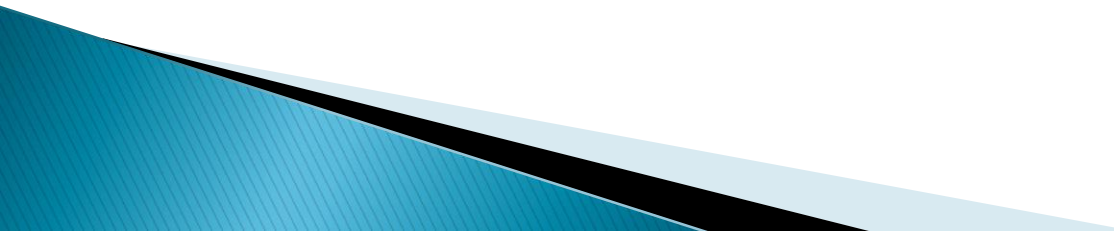
Ministry of Higher Education
and Scientific Research
University of Ishik
College of education
Department of Biology



Practical Invertebrates
Grade two(2018–2019)

Yadasht Haydar

Classification is a process related to categorization, the process in which ideas and objects are recognized, differentiated, and understood.



Classification is important because it allows scientists to identify, group, and properly name organisms via a standardized system (Linnaeus Taxonomy); based on similarities found in the organisms

- DNA/RNA (genetics),
- Adaptations (Evolution),
- Embryonic development (Embryology) to other known organisms

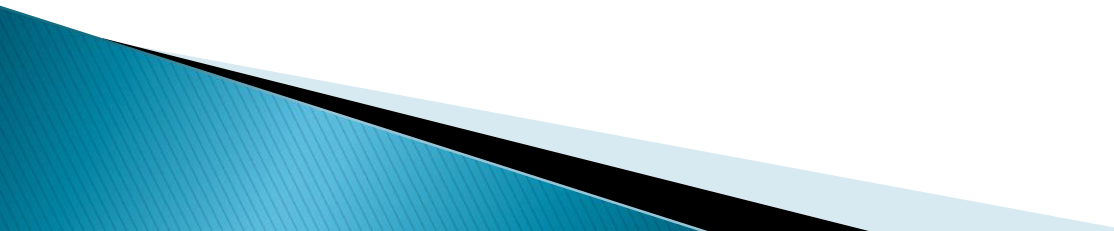
What is an animal ??????

- Eukaryotic
- Multicellular: Multiple cell types (Not just many cells)
- Heterotrophic
- No cell wall
- Characteristics of early development (unique!)
 - Blastula and gastrula stages unique to animals
 - Sponges, have precursors to these stages

Invertebrates

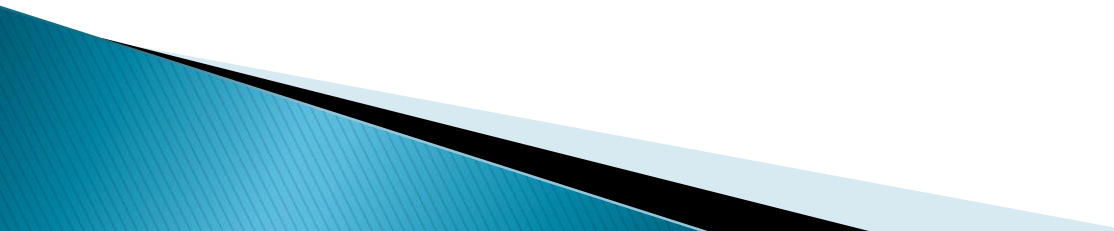
invertebrates are animals that neither possess nor develop a vertebral column (commonly known as a *backbone* or *spine*), derived from the notochord.

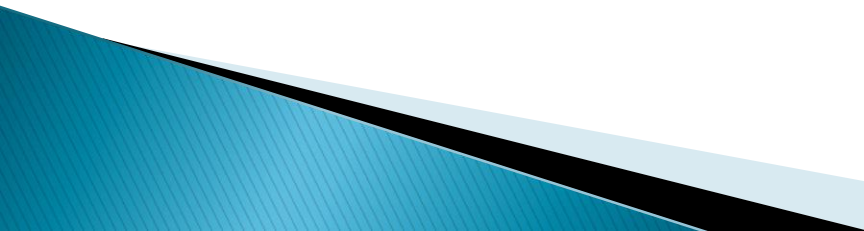
This includes all animals apart from the subphylum Vertebrata. Familiar examples of invertebrates include insects; crabs, lobsters and their kin; snails, clams, octopuses and their kin; starfish, sea-urchins and their kin; jellyfish, and worms.



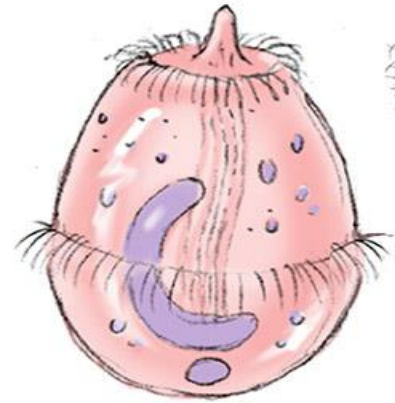
Invertebrate Phyla

So Invertebrates include the following phyla:

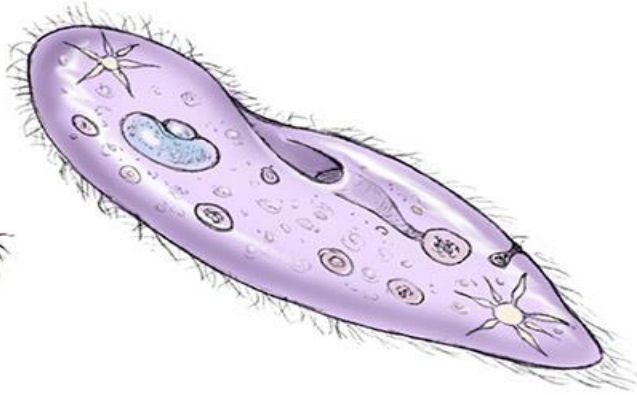
1. Phylum: Protozoa
 2. Phylum: Porifera
 3. Phylum: Coelentrata
 4. Phylum: Platyhelminthes
 5. Phylum: Nematoda
 6. Phylum: Acanthocephala
 7. Phylum: Annelida
 8. Phylum: Arthropoda
 9. Phylum: Mollusca
 10. Phylum: Echinodermata
- 

- ▶ are eukaryotic microorganisms
 - ▶ Protozoa are located in most moist habitats.(Free-living species inhabit freshwater and marine environments, and terrestrial species inhabit decaying organic matter. Some species are parasites of plants and animals.
 - ▶ Protozoa are notable for their ability to move independently.
 - ▶ They usually lack the capability for photosynthesis(except euglena)
 - ▶ most protozoa reproduce by asexual methods, sexual reproduction has been observed in several specie
 - ▶ most protozoa species are aerobic, but some anaerobic species have been found in the human intestine and animal rumen.
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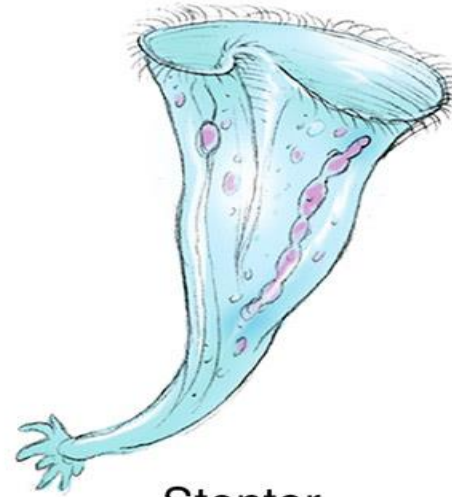
Phylum :Protozoa



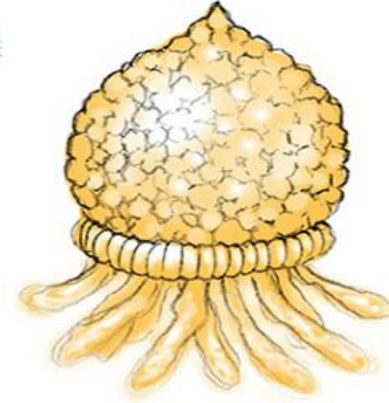
Didinium



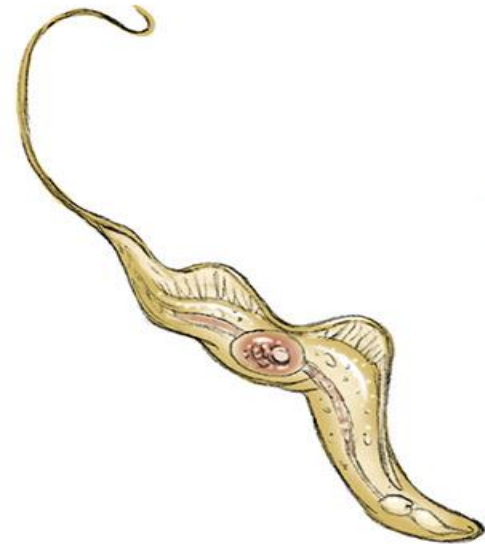
Paramecium



Stentor



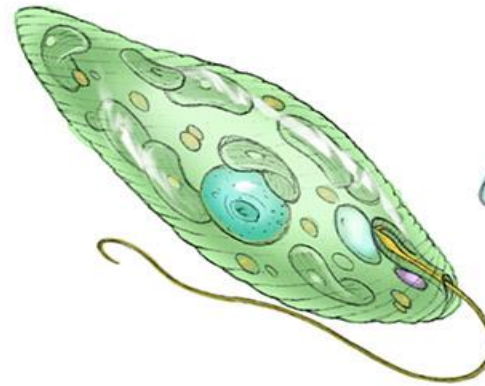
Difflugia



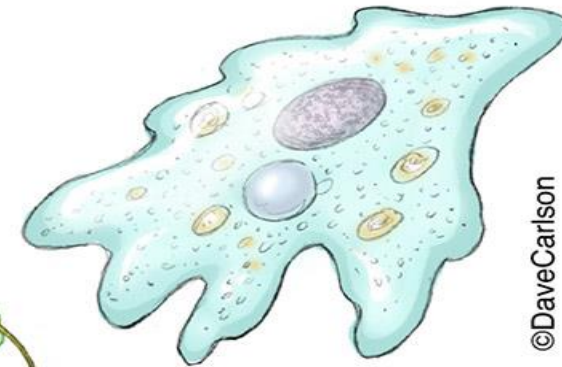
Trypanasoma



Carchesium



Euglena



Amoeba

PHYLUM PORIFERA

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3. Phylum: Coelenterates



hydra



Jelly fish

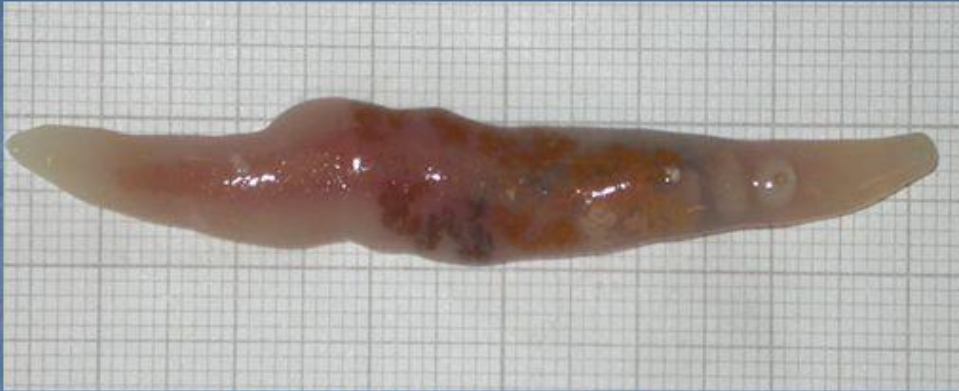


metdrium

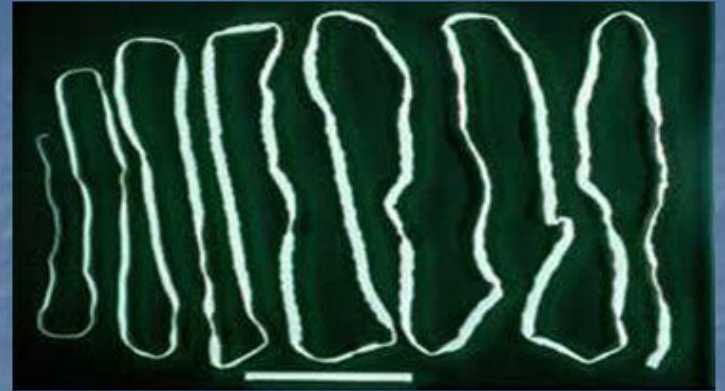


obelia

4 Classes of Phylum Platyhelminthes



TREMATODA – *flukes*



CESTODA – *tapeworms*



MONOGENEA – *small, parasitic flatworms*



TURBELLARIA - *small, free-living flatworms*

Phylum:Nematode
s



Rhabditis



Dracuculus



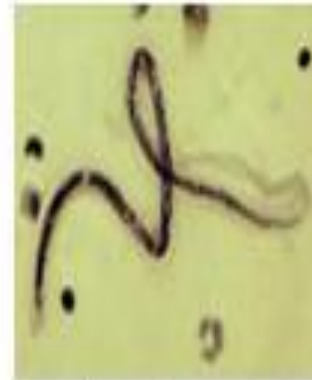
Ascaris



Enterobium

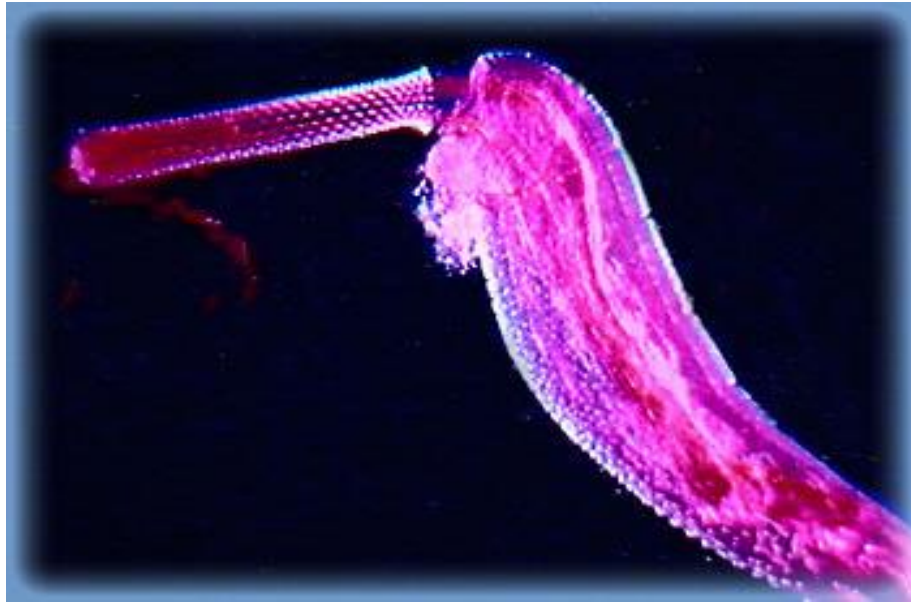


Trichiuris



Loa loa

Phylum: Acanthocephala





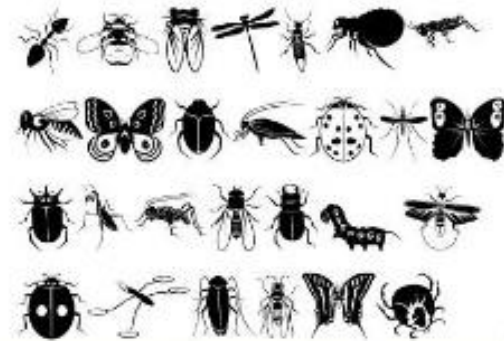
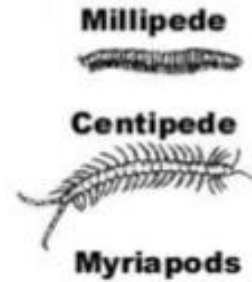
Phylum Annelida

the segmented worms



phylum Arthropoda (classification)

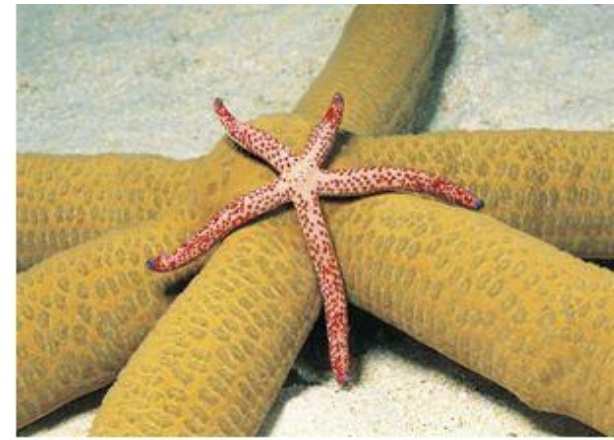
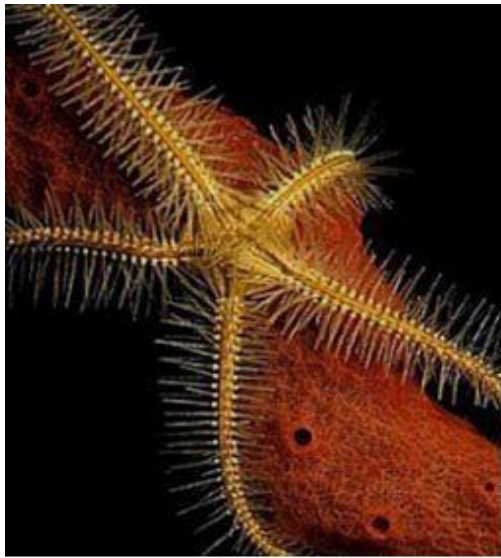
- 1) crustacea
- 2) chilopod
- 3) diplopoda
- 3) Arachnids
- (4) insecta



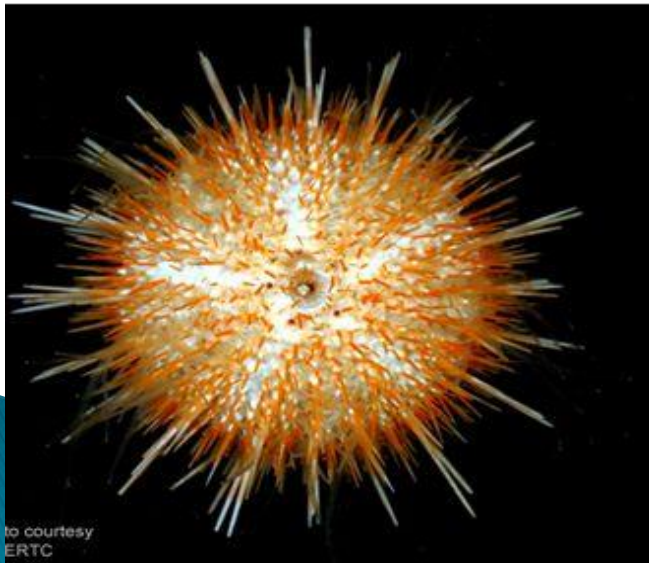
Phylum: Mollusca

Gastropods, Bivalves & Cephalopods





Phylum Echinodermata



Kingdom: Protista

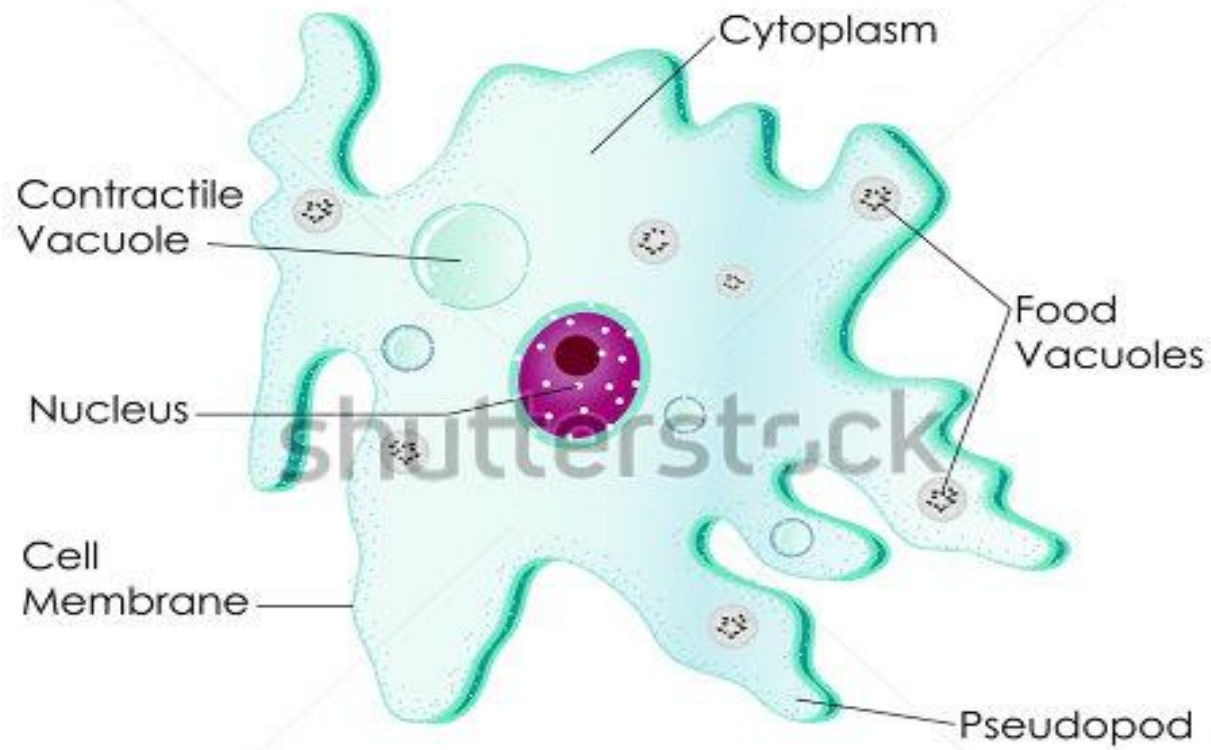
Subkingdom: Protozoa

Phylum: Protozoa

Characteristics of protozoa

1. They are microscopic animals that freely live either singly or in colonies, in the sea, fresh water and damp soil, but some are parasitic.
2. Body is unicellular performs all functions of the body. The cytoplasm is divided into two regions; ectoplasm and endoplasm. The body is either bilaterally, radial symmetry or asymmetry.
3. Nutrition is holozoic, i.e., herbivorous, carnivorous or omnivorous.
4. Respiration is by diffusion
5. Movement is by pseudopodia, flagella, cilia.
6. Reproduction occurs asexually (by binary fission) and sexually (by conjugation).
7. Excretion is via contractile vacuoles or by diffusion
8. Lifecycle is simple includes trophozoites and cysts.

<https://www.cliffsnotes.com/study-guides/biology/microbiology/the-protozoa/general-characteristics-of-protozoa>



Biology

Amoeba

www.shutterstock.com · 143915440

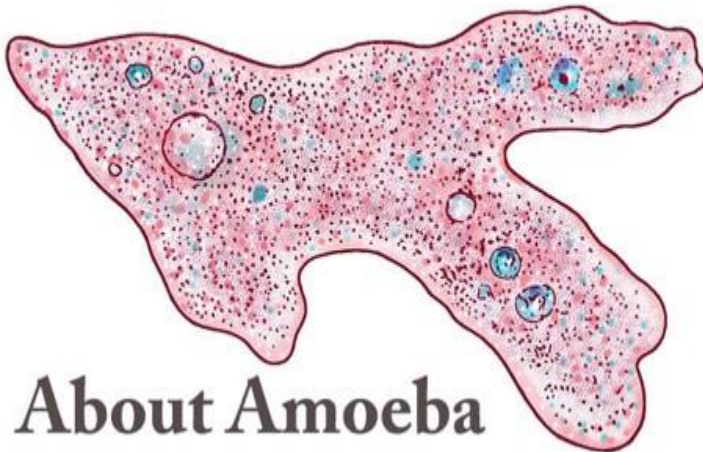
General Characteristics of Amoeba

Subphylum: sarcomastigophora

superclass: sarcodina

Amoeba sp.

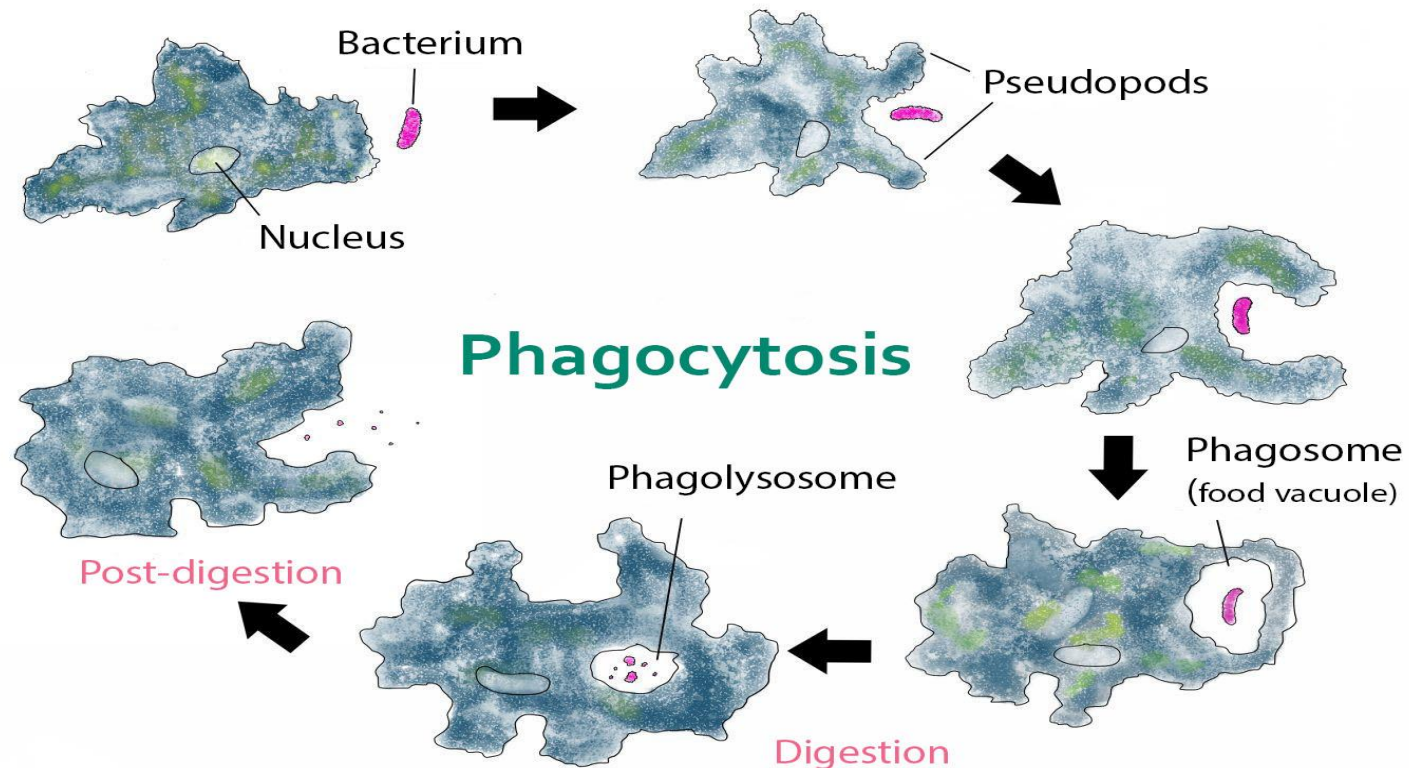
Amoeba is a protozoan that has no specific shape. It is the most common protozoa found in fresh water. They live individually and can move in search of food. Most freshwater bacteria are microscopic while marine ones are visible to naked eye.



About Amoeba

<https://www.studyread.com/examples-of-protozoa/>

They do not have the mouth but just engulf solid particles by **phagocytosis** from any point of the cytoplasmic membrane. They also drink dissolved form of liquid nutrients by **pinocytosis**. Their food includes live microbes like bacteria and also dead organic matter.



They reproduce by binary fission asexually. But recent studies show them to even have sexual means of reproduction. Some types of amoeba also cause severe diseases to humans.

